

## NOMENCLATURAL PROBLEMS IN THE ACACIA CORNIGERA COMPLEX

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The name *Acacia cornigera* (L.) Willd., based on *Mimosa cornigera* L., has been applied to two different species by modern authors. The question of the correct usage of the name was raised by Daniel H. Janzen, a student of insect ecology at the University of California, Berkeley, who is interested in the ants of the genus *Pseudomyrmex* that inhabit the thorns of the Mexican "bull horn" acacias.

Janzen noted that Standley (1922) placed *A. cornigera* in synonymy with *A. spadicigera* Schl. & Cham. and recognized *A. sphaerocephala* Schl. & Cham. as a separate species. Britton and Rose (1928) made the opposite determination, placing *A. sphaerocephala* in synonymy with *A. cornigera* and separating *A. spadicigera*, the two taxa being designated as the segregate genus *Tauroceras* Britt. & Rose. In at least two recent floras (Standley and Steyermark, 1946; León and Alain, 1951) the nomenclature of Britton and Rose was followed as to species, although the generic status of *Tauroceras* was not recognized.

The identity of *A. cornigera* and its relationship to *A. spadicigera* and *A. sphaerocephala*, as well as the putative synonymy, obviously is in need of clarification.

A part of the confusion is traceable to Linnaeus' original descriptions of *Mimosa cornigera* (1737, 1753) in which he included in his literature citations, references to material from the East Indies, although the type, from the garden of George Clifford, was presumably of Mexican origin. De Candolle (1825), on the basis of the literature, separated *A. cornigera* into two varieties, *americana* and *indica*.

Schlechtendal and Chamisso (1830), considering *A. cornigera* to represent a mixture of species, rejected the name and published two new ones to identify Mexican collections made by Schiede and Deppe, viz. *A. spadicigera* Schl. & Cham. and *A. sphaerocephala* Schl. & Cham.

Schenck (1913) followed Schlechtendal and Chamisso in disregarding *A. cornigera* and described three additional species, *A. cubensis*, based on Mexican material introduced into Cuba, *A. nicoyensis*, from Costa Rica, and *A. veracruzensis*, from Mexico. Safford (1914, 1915) considered *A. cornigera* to be distinct from both *A. spadicigera* and *A. sphaerocephala*, accepted Schenck's three species, and added another three names to the complex, *A. hernandezii*, *A. furcella*, and *A. dolichocephala*, all based on Mexican collections.

This group of some nine published species is characterized by inflated, indehiscent fruits and paired, stipular spines that, in symbiosis with ants, may develop into thorns as much as 11 cm long, suggesting miniature replicas of the horns of Longhorn cattle. One or more "boat-shaped" glands may occur on the axis of the leaf, at least one usually on the

petiole just below the first pair of pinnae. Nectar glands commonly are present at the tips of the young leaflets.

Examination of pertinent herbarium material confirms that two species, or groups of species, can be recognized. The members of one group, including *A. sphaerocephala*, *A. veracruzensis*, and *A. dolichocephala*, have similar, globose inflorescences and leaflets with only the midvein, or costa, evident. The species of the other group, *A. spadicigera*, *A. cubensis*, *A. nicoyensis*, *A. hernandezii*, and *A. furcella*, all exhibit oblong, spicate inflorescences and leaflets with secondary veins clearly visible.

Standley (1922) and succeeding authors have agreed that the two groups of species are reduceable to two species, one of which is referable to *Acacia cornigera*. A third related species, *Acacia mayana* Lundell (1937), is apparently distinct and is excluded from further discussion in this paper.

The type of *Mimosa cornigera* L., the basionym of *Acacia cornigera*, is in the Clifford Herbarium (BM). It is a sterile specimen, and the only useable comparative character is the venation of the leaflets. Fortunately, that is sufficiently distinctive in the two species to permit recognition.

Through the kindness of W. T. Stearn of the British Museum, I have been permitted to examine a few leaflets from that type specimen and have found that numerous secondary veins are clearly visible, as in *A. spadicigera*, et al. Therefore, I believe that Standley's original interpretation, placing *A. spadicigera* in synonymy under *A. cornigera*, was correct, and that *A. sphaerocephala* is a distinct species.

Another question raised by Janzen concerns the taxonomic rank of *Tauroceras*. The species discussed above constitute the genus *Tauroceras* Britt. & Rose and also Safford's "group" *Ceratophysae* of the genus *Acacia*. It is difficult to categorize this assemblage of species whose chief common character is the indehiscence of the pods due to lack of sutures. There are other species of *Acacia* such as those in the segregate genera *Vachellia* and *Poponax* with similar appearing terete or subterete fruits in which the sutures are developed and dehiscence may occur. Anatomical and biosystematic studies are needed to elucidate the relationships. I do not believe that generic, or even subgeneric, distinction is warranted, but that the term "*Acacia cornigera* complex" is preferable at this premature stage of our knowledge.

An exhaustive treatment of the complex is beyond the scope of this paper, but the following brief resumé, including citations of specimens examined, may be helpful.

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| Inflorescences oblong, spicate, the interfloral bracteoles with acuminate, sometimes sagittate laminae, the tips often recurved; leaflets with costa and secondary venation clearly evident..... | 1. <i>A. cornigera</i>      |
| Inflorescences globose, capitate, the interfloral bracteoles obtuse; leaflets with costa present but secondary venation not evident.....   | 2. <i>A. sphaerocephala</i> |

1. *ACACIA CORNIGERA* (L.) Willd. Sp. Pl. 4:1080. 1806. *Mimosa cornigera* L. Sp. Pl. 520. 1753. *A. cornigera* var *americana* DC. Prodr. 2:460. 1825. *A. spadicigera* Schl. & Cham. Linnaea 5:594. 1830. *A. cubensis* Schenck, Repert. Sp. Nov. 12:360. 1913. *A. nicoyensis* Schenck, Repert. Sp. Nov. 12:360. 1913. *A. hernandezii* Safford, Jour. Wash. Acad. 4:358. 1914. *A. furcella* Safford, Jour. Wash. Acad. 4:359. 1914. *Tauroceras spadicigerum* (Schl. & Cham.) Britt. & Rose, N. Am. Fl. 23:85. 1928. *T. cornigerum* (L.) Britt. & Rose, N. Am. Fl. 23:86. 1928, excl. synonym.

Type: Cultivated, presumably from material introduced from Mexico (BM, photograph and fragment of type seen).

Representative specimens seen. MEXICO. Veracruz: near Laguna Verde, *Schiede & Deppe* 685 (US, fragment of type of *A. spadicigera* ex HAL, photograph of isotype ex B); Lake Catemaco, *Nelson* 427 (US, type of *A. furcella*); San Francisco, *Smith* 1509 (NY); Alvarado, *King* 2431 (US); Cuitláhuac, *King* 2671 (NY, US); Veracruz, *Müller* 89 (NY); Zacuapan, *Schenck* 836 (US); *Purpus* 7748 (NY, US); Pueblo Viejo, *Palmer* 448b (NY, US); Cordoba, *Fisher* 93 (US). San Luis Potosí: Rascon, *Palmer* 669 (NY, US, type of *A. hernandezii*); Las Palmas, *Pringle* 3691 (NY, US); *Rose & Hough* 4870 (US); Tancanhuitz, *Nelson* 4404 (NY, US). Chiapas: Huistla, *Purpus* 6837 (US); San Bartolomé, *Collins & Doyle* 112 (US); Pichucalco, *Collins & Doyle* 260 (US). Campeche (as Tabasco): Atasta, *Roviroso* 461 (US). GUATEMALA. Alta Verapaz: near Finca Sepacuite, *Cook & Griggs* 8 (US). Izabel: Quiriguá, *Standley* 23836 (US); 24054 (NY, US). Sololá: Patulul, *Kellerman* 5915 (US). Suchitepéquez: Rio Bravo, *Mell* 19 (US); Mazatenango, *Maxon & Hay* 3469 (NY, US); *Kellerman* 5800 (US). EL SALVADOR. La Libertad: Ateos, *Standley* 23360 (US). San Salvador: San Salvador, *Standley* 19150 (NY, US); 19343 (US); 22464 (NY, US); 22674 (US); 23588 (US); *Calderón* 81 (NY, US); *Renson* 89 (NY, US); between San Martín and Laguna de Ilopango, *Standley* 22580 (US). San Vicente: San Vicente, *Standley* 21290 (US); 21687 (NY, US). BRITISH HONDURAS. El Cayo: El Cayo, *Bartlett* 13007 (US). Belize: Belize, *Lundell* 4381 (US). NICARAGUA. Granada, *Mell* s. n., Jan. 23, 1925 (NY.) COSTA RICA. Guanacaste: Nicoya, *Tondus* (Herb. Pittier No.) 13538 (US, type of *A. nicoyensis*). Alajuela: vicinity of San Ramon, Los Loras, *Brenes* 22677 (NY). CUBA. Retiro, cultivated, *Wright* 2402 (US, photograph and fragment of isotype of *A. cubensis* ex GH); Habana, Tulipán, introduced, cultivated, or naturalized, *Bro. León* 684 (NY, US, fragment); 3690 (NY, US), LESSER ANTILLES. Guadeloupe: Basse Terre, introduced and naturalized, *Duss* 3226 (NY, US); *Bailey & Bailey* 198 (US); Gosier, *Stehlé* 499 (NY). Martinique: St. Pierre, Jardin des Plantes, introduced from Mexico, *Duss* 1144 (NY, US, fragment); Tivoli, *Stehlé* 6685 (US).

2. *ACACIA SPHAEROCEPHALA* Schl. & Cham. Linnaea 5:594. 1830. *A. veracruzensis* Schenck, Repert. Sp. Nov. 12:362. 1913. *A. dolichocephala* Safford, Jour. Wash. Acad. 5:355. 1915.

Type: Actopan, Veracruz, Mexico, *Schiede & Deppe* 684 (B, photograph and fragment of type seen).

Representative specimens seen. MEXICO. Tamaulipas: Tampico, *Palmer* 133 (NY, US); Sta. Rafaela, between Tampico and Tula, *Berlandier* 2145 (US); Ciudad Madero, *King* 3990 (NY, US). San Luis Potosí: Tanquian, Tancanhuitz, *Cuevas* s. n., in 1908 (US). Veracruz: Veracruz, *Schenck* 916 (US, photograph and fragment of type of *A. veracruzensis* ex Herb. Schenck, B?); *Greenman* 87 (NY, US, isotypes of *A. dolichocephala*); *Müller* 88 (NY); near Tampico, *Palmer* 448a (US).

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## NOTES ON THE LEAF EPIDERMIS AND CHROMOSOME NUMBER OF SWALLENIA (GRAMINEAE)

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During April, 1963, the author explored portions of Death, Saline, and Eureka valleys in Inyo County, California. Of special interest in Eureka Valley is the large sand dune at the south end and the series of endemics growing on and near it (Munz and Roos, 1955). Among the most striking of these endemics is the monotypic grass genus *Swallenia* (formerly *Ectosperma*, Soderstrom and Decker, 1963).

*Swallenia alexandrae* (Swallen) Soderstrom & Decker forms small, dense, somewhat isolated colonies around the lower one-third of the dune (fig. 1). The grass is a vigorous, almost bamboo-like plant up to five feet tall, with stiff, sharp-pointed, distichous leaves. In the first week of April these plants were just coming into bloom and material was fixed in 3:1 ethyl alcohol-glacial acetic acid for cytological and epidermal studies. This material is the basis for the following observations.

Metcalf (1960) did not note the presence of bicellular microhairs on the abaxial leaf surfaces of *Swallenia*. Material studied by the present author clearly shows the presence of occasional bicellular microhairs (fig. 2A). These are very fragile, the delicate terminal cell often collapsing in preparation of the slide. Other epidermal features observed agree with those reported by Metcalf.